

## WHAT IS CLAIMED IS:

- Sub A<sub>2</sub> >
- 5 1. In a scanning probe microscope and/or nanomachining system (in which scanning probe techniques are a subset of functionality) including a probe and/or tool positioned relative to a sample volume and having relative motion between the probe and the sample volume in the X,Y and Z space and controlled and sensed in any direction with respect to the sample volume or any element thereof and producing data responsive to any element or property of said volume, a method for accurately measuring a parameter of that volume or performing a task related to that volume including the
- 10 following steps:
- providing a first scan by the probe and/or tool of the target volume in X, Y and Z or any element thereof to produce data representative of the volumetric element of target,
- 15 storing the data representative of the volume, any parametric representation, and/or simultaneous parametric representation and/or any element of that volume,
- providing, optionally, a second operation based on the information previously
- 20 obtained,
- measuring a portion or all of the volume or any other parameter associated with the target volume or making any change to said volume.
- 25 2. The method of claim 1 wherein first scan produces volume data by an atomic force measurement.
3. The method of claim 1 wherein first scan produces volume data by a tunneling current measurement.
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- 30 4. The method of claim 1 wherein first scan produces volume data by a scanning electron beam probe measurement.
5. The method of claim 1 wherein first scan produces volume data by a scanning ion beam probe measurement.
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- 35 6. The method of claim 4 or 5 wherein first scan simultaneously produces electromagnetic data by a scanning particle beam probe measurement.
7. The method of claim 4 or 5 wherein first scan simultaneously produces secondary particle data by a scanning particle beam probe measurement.
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8. The method of claim 1 where the second scan produces volume data by an magnetic force, and/or field and/or gradient measurement.

9. The method of claim 1 wherein first scan produces volume data by an electric field measurement.
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As > 10. The method of claim 1 wherein second scan is used to modify the volume in any  
5 contd. measurable manner.
11. The method of claim 9 wherein the modification is accomplished by the probe mechanically cutting the volume of the sample.
12. The method of claim 9 wherein the modification is accomplished by applying an electric field between the probe and the volume of the sample.
- 10 13. The method of claim 9 wherein the modification is accomplished by applying a particle beam of ions or electrons between the probe and the volume of the sample.
14. In a scanning probe microscope and/or nanomachining system (in which scanning probe techniques are a subset of functionality) including a probe and/or tool positioned relative to a sample volume or topography and having relative motion between the probe and the sample volume or topography in the X,Y and Z space and controlled and sensed in any direction with respect to the sample volume or topography or any element thereof and producing data responsive to any element or property of said volume or topography, a method for accurately measuring a parameter of that volume or topography or performing a task related to that volume or topography including the following steps:
- 15 providing a first scan by the probe and/or tool of regions around the target volume or topography in X, Y and Z
- 20 or any element thereof to produce data representative of the bounding volumetric or topographic elements of the target(s) volume or topography,
- 25 storing the data representative of the bounding volume or topography, any parametric representation, and/or simultaneous parametric representation and/or any element of that volume or topography,
- 30 providing, optionally, a second operation based on the information previously obtained,
- 35 measuring a portion or all of the volume or topography or any other parameter associated with the target volume or topography or making any change to said volume or topography.
- 14a The method of claim 14 wherein first scan produces volume or topographic data by an atomic force measurement.

15. The method of claim 14 wherein first scan produces volume or topographic data by a tunneling current measurement.
16. The method of claim 14 wherein first scan produces volume or topographic data by a scanning electron beam probe measurement.
17. The method of claim 14 wherein first scan produces volume or topographic data by a scanning ion beam probe measurement.
18. The method of claim 17 or 18 wherein first scan simultaneously produces electromagnetic data by a scanning particle beam probe measurement.
19. The method of claim 17 or 18 wherein first scan simultaneously produces secondary particle data by a scanning particle beam probe measurement.
20. The method of claim 14 where the second scan produces volume or topographic data by an magnetic force, and/or field and/or gradient measurement.
21. The method of claim 14 wherein first scan produces volume or topographic data by an electric field measurement.
22. The method of claim 14 wherein second scan is used to modify the volume in any measurable manner.
23. The method of claim 21 wherein the modification is accomplished by the probe mechanically cutting the volume of the sample.
24. The method of claim 21 wherein the modification is accomplished by applying an electric field between the probe and the volume of the sample.
25. The method of claim 21 wherein the modification is accomplished by applying a particle beam of ions or electrons between the probe and the volume of the sample.
26. In a scanning probe microscope and/or nanomachining system (in which scanning probe techniques are a subset of functionality) including a probe and/or tool positioned relative to a sample volume or topography and having relative motion between the probe and the sample volume or topography in the X,Y and Z space and controlled and sensed in any direction with respect to the sample volume or topography or any element thereof and producing data responsive to any element or property of said volume or topography, a method for accurately measuring a parameter of that volume or topography or performing a task related to that volume or topography including the following steps:
- providing a first location by the probe and/or tool of regions around/on or within the target volume or topography in X, Y and Z
  - or any element thereof to locate the volumetric or topographic elements of a starting reference point or points the target(s) volume or topography,
  - without storing the data representative of the bounding volume or topography, any parametric representation, and/or simultaneous parametric representation

and/or any element of that volume or topography,

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measuring a portion or all of the volume or topography or any other parameter associated with the target volume or topography or making any change to said volume or topography.

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27. The method of claim 26 wherein first scan produces volume data by an atomic force measurement.

28. The method of claim 26 wherein first scan produces volume data by a tunneling current measurement.

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29. The method of claim 26 wherein first scan produces volume data by a scanning electron beam probe measurement.

30. The method of claim 26 wherein first scan produces volume data by a scanning ion beam probe measurement.

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31. The method of claim 29 or 30 wherein first scan simultaneously produces electromagnetic data by a scanning particle beam probe measurement.

32. The method of claim 29 or 30 wherein first scan simultaneously produces secondary particle data by a scanning particle beam probe measurement.

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33. The method of claim 26 where the second scan produces volume data by an magnetic force, and/or field and/or gradient measurement.

34. The method of claim 26 wherein first scan produces volume data by an electric field measurement.

35. The method of claim 26 wherein second scan is used to modify the volume in any measurable manner.

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36. The method of claim 34 wherein the modification is accomplished by the probe mechanically cutting the volume of the sample.

37. The method of claim 34 wherein the modification is accomplished by applying an electric field between the probe and the volume of the sample.

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38. The method of claim 34 wherein the modification is accomplished by applying a particle beam of ions or electrons between the probe and the volume of the sample.

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39. An illumination system for opaque or optically limited or blocked stage in which illumination is introduced along one or more edges of the sample and is arranged so reflecting elements cause the illumination to be propagated across the sample.

40. An illumination system for opaque or optically limited or blocked stage in which illumination is introduced along one or more edges of the sample and is arranged so reflecting elements cause the illumination to be propagated across the sample as in 39 in which the intensity of the illumination introduced into the sample is a function of the

position of the stage with respect to the optical observing means.

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41. An illumination system for opaque or optically limited or blocked stage in which illumination is introduced along one or more sides of the sample, striking the sample at a glancing angle just under the optical observing means.

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42. An illumination system for opaque or optically limited or blocked stage in which illumination is introduced along one or more sides of the sample, striking the sample at a glancing angle just under the optical observing means as in 41 in which the source means is fixed to always point at the glancing area below a fixed optical observing means.

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43. An illumination system for opaque or optically limited or blocked stage in which illumination is introduced along one or more sides of the sample, striking the sample at a glancing angle just under the optical observing means as in 41 in which the source means is moved to always point at the glancing area below a movable optical observing means

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44. A nanomachining system as describe herein in which the tip or tool is clamped by mechanical, magnetic, or electrostaic means prior to beginning the nanomachining material modification process.

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45. A nanomachining system as described herein in which the tip or tool is stopped from any SPM induced vibration and is moved a known or estimated distance to contact or nearly contact the target volume.

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46. A nanomachining system as described herein in which the tip or tool is stopped from any SPM induced vibration and is moved until a measureable change in any related sensing system indicates that the tip ot tool is in contact with the target volume.

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47. A nanomachining system as described herein in which the tip or tool is not stopped from any SPM induced vibration but is restricted in its normal motion (associated with measurement) so as to follow the loci of a target nanomachining step to nanomachine a particular featuee(s) in the target volume.

48. A nanomachining system as described herein in which the tip or tool is not stopped from any SPM induced vibration but is restricted in its normal motion (associated with measurement) so as to follow the loci of a target nanomachining step to nanomachine a particular featuee(s) in the target volume and the means for monitoring the tip ot tool for measurement is used to determine when the tip or tool is no longer cutting the target volume.

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49. A nanomachining system as described herein in which the tip or tool is not stopped from any SPM induced vibration but is restricted in its normal motion (associated with measurement) so as to follow the loci of a target nanomachining step to nanomachine a particular feature(s) in the target volume and the means for monitoring the tip or tool for measurement is used to determine when the tip or tool is no longer cutting the target volume.

表 1 继续妊娠者		表 2 终止妊娠者	
项目	例数	项目	例数
年龄		年龄	
18~24	10	18~24	10
25~34	10	25~34	10
35~44	10	35~44	10
45~54	10	45~54	10
55~64	10	55~64	10
65~74	10	65~74	10
75~84	10	75~84	10
85~94	10	85~94	10
95~104	10	95~104	10
105~114	10	105~114	10
115~124	10	115~124	10
125~134	10	125~134	10
135~144	10	135~144	10
145~154	10	145~154	10
155~164	10	155~164	10
165~174	10	165~174	10
175~184	10	175~184	10
185~194	10	185~194	10
195~204	10	195~204	10
205~214	10	205~214	10
215~224	10	215~224	10
225~234	10	225~234	10
235~244	10	235~244	10
245~254	10	245~254	10
255~264	10	255~264	10
265~274	10	265~274	10
275~284	10	275~284	10
285~294	10	285~294	10
295~304	10	295~304	10
305~314	10	305~314	10
315~324	10	315~324	10
325~334	10	325~334	10
335~344	10	335~344	10
345~354	10	345~354	10
355~364	10	355~364	10
365~374	10	365~374	10
375~384	10	375~384	10
385~394	10	385~394	10
395~404	10	395~404	10
405~414	10	405~414	10
415~424	10	415~424	10
425~434	10	425~434	10
435~444	10	435~444	10
445~454	10	445~454	10
455~464	10	455~464	10
465~474	10	465~474	10
475~484	10	475~484	10
485~494	10	485~494	10
495~504	10	495~504	10
505~514	10	505~514	10
515~524	10	515~524	10
525~534	10	525~534	10
535~544	10	535~544	10
545~554	10	545~554	10
555~564	10	555~564	10
565~574	10	565~574	10
575~584	10	575~584	10
585~594	10	585~594	10
595~604	10	595~604	10
605~614	10	605~614	10
615~624	10	615~624	10
625~634	10	625~634	10
635~644	10	635~644	10
645~654	10	645~654	10
655~664	10	655~664	10
665~674	10	665~674	10
675~684	10	675~684	10
685~694	10	685~694	10
695~704	10	695~704	10
705~714	10	705~714	10
715~724	10	715~724	10
725~734	10	725~734	10
735~744	10	735~744	10
745~754	10	745~754	10
755~764	10	755~764	10
765~774	10	765~774	10
775~784	10	775~784	10
785~794	10	785~794	10
795~804	10	795~804	10
805~814	10	805~814	10
815~824	10	815~824	10
825~834	10	825~834	